comprising 2^n output groups, each of the output groups having a distinct binary output group address in the form of $b_1b_2...b_n$ with b indistinguishable output ports, and k super-stages of 2b-to-b multicast concentrators wherein each of the multicast concentrators is a 2b×2b partial sorting network of interconnected bicast cells, and b of its 2b output ports are grouped into a 0-output group while the remaining b output ports are grouped into a 1-output group, the network being characterized by the guide $\gamma(1), \gamma(2), \ldots, \gamma(k)$, where γ is a mapping from the set $\{1, 2, \ldots, k\}$ to the set $\{1, 2, \ldots, n\}$, and the packet being either a real data packet destined for a rectangular set of output group addresses represented by a quaternary sequence $Q_1, Q_2, \ldots, Q_n$, where each Q_j is a quaternary symbol in any of the three values representing '0-bound', '1-bound' or 'bicast', or being an idle packet having no pre-determined destination; (ii) routing tag circuitry for generating a routing tag $Q_{\gamma(1)}Q_{\gamma(2)}...Q_{\gamma(k)}$ for the packet with reference to the guide of the network and the destination output group addresses of the packet, wherein each $Q_{\gamma(j)}$, $1 \leq j \leq k$, has a value representing 'idle' if the packet is an idle packet or has one of the three values representing '0-bound', '1-bound' or 'bicast' if the packet is a real data packet; and (iii) a routing control circuitry for routing the packet through the network by using $Q_{\gamma(j)}$ in the routing tag of the packet in the j-th super-stage multicast concentrator, $1 \leq j \leq k$, to select an output group or both output groups from the j-th super-stage multicast concentrator to emit the packet.

A. cont.

In accordance with a broad method aspect of the present invention, a method for self-routing a packet through a $b2^n \times b2^n$ switching network includes: configuring the switching network with (a) 2^n output groups, each of the output groups

having a distinct binary output group address in the form of $b_1b_2...b_n$ with b indistinguishable output ports, and (b) k super-stages of 2b-to-b multicast concentrators wherein each of the multicast concentrators is a 2b×2b partial sorting network of interconnected bicast cells and b of its 2b output ports are grouped into a 0-output group with the remaining b output ports being grouped into a 1-output group, the network being characterized by the guide $\gamma(1), \gamma(2), \ldots, \gamma(k)$, where γ is a mapping from the set $\{1, 2, \ldots, k\}$ to the set $\{1, 2, \ldots, n\}$, and wherein the packet is either a real data packet destined for a rectangular set of output group addresses represented by a quaternary sequence $Q_1, Q_2, \ldots, Q_n$, where each Q_j is a quaternary symbol in any of the three values representing '0-bound', '1-bound' or 'bicast', or an idle packet having no pre-determined destination; generating a routing tag $Q_{\gamma(1)}Q_{\gamma(2)}...Q_{\gamma(k)}$ for the packet with reference to the guide of the network and the destination output group addresses of the packet, wherein each $Q_{\gamma(j)}$, $1 \leq j \leq k$, has a value representing 'idle' if the packet is an idle packet or has one of the three values representing '0-bound', '1-bound' or 'bicast' if the packet is a real data packet; and routing the packet through the network by using $Q_{\gamma(j)}$ in the routing tag of the packet in the j-th super-stage multicast concentrator, $1 \leq j \leq k$, to select an output group or both output groups from the j-th super-stage multicast concentrator to emit the packet.--.

A1 cont.

Please replace lines 1-3 on page 13 as follows: --

FIG. 21B depicts a (1 2 3) permutation on an 8×8 exchange;

A2

FIG. 21C depicts a (3 1) permutation on an 8×8 exchange;

FIG. 21D depicts a combined (1 4)(2 3) permutation on an 8×8 exchange;--.